

**Testimony of
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The National Rural Telecommunications Cooperative
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U.S. House of Representatives
Committee on Agriculture**

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Introduction

Good morning. My name is Bob Phillips, and I am the President and CEO of the National Rural Telecommunications Cooperative (NRTC). I greatly appreciate the opportunity to appear before you today to discuss the Farm Bill Concept Paper, specifically regarding all the positive implications of expanding broadband access in rural America.

NRTC supports more than 1,000 rural utilities and affiliates in 46 states in delivering telecommunications and information technology solutions to their communities. These NRTC members serve more than 35 million customers in areas of the country that have been unserved or under-served by traditional utilities and other businesses. Building on a foundation of community service, we work – as a cooperative – to ensure that all Americans share equally in the benefits of the digital age.

The timing of this hearing is extremely appropriate. As someone who has dedicated his career to helping rural Americans gain access to the same level of telecommunications services enjoyed by urban and suburban Americans, I am delighted at the significant interest that broadband deployment has attracted on this committee. Mr. Chairman, you and your colleagues are showing great foresight in addressing this issue as part of the Rural Economic Development title of the Farm Bill.

Rural America today needs resources to support the deployment of broadband services equivalent to those that will be offered in urban and suburban areas. The economic development of rural communities depends on the availability of modern communications capabilities. Current RUS programs have benefited many rural Americans. To build out rural broadband facilities, however, the federal government must expand its commitment. With access to high-speed Internet technologies, rural communities will have the tools they need to attract new businesses and infuse new life into existing businesses.

Later in this testimony, I have a list of suggestions for making the most out of the limited resources available for rural broadband development.

NRTC Background

As a national cooperative, we provide our members with comprehensive technology solutions that include product research and development, technical support, marketing assistance, regional support, and industry representation. NRTC's solutions enable our member utilities to expand their core competencies and broaden the scope of valued services they provide their local communities.

The National Rural Electric Cooperative Association (NRECA) and the National Rural Utilities Cooperative Finance Corporation (CFC) founded NRTC in 1986 to bring valuable telecommunications services to rural communities, just as the rural electric cooperative members of NRECA and CFC had helped bring electricity to rural America in the 1930s and 40s.

NRTC also shares many members and has a working relationship with the National Telephone Cooperative Association (NTCA).

NRTC entered the satellite business offering C-band (large dish) television service to rural communities. In the early 1990s, we forged an important partnership with DIRECTV Inc., a unit of Hughes Electronics Corporation. NRTC and its members invested more than \$100 million toward launching the nation's first and most successful high-power direct broadcast satellite (DBS) system. By making its members a local distribution channel for this valuable service, NRTC has become the leading distributor of satellite television service and hardware to rural America. Today, NRTC members and affiliates serve more than 1.8 million rural consumers, nearly 20 percent of all DIRECTV subscribers.

NRTC's family of products and services includes dial-up and high-speed Internet services, power quality products, and utility communications products and services, including the LINK power quality monitoring system, Cooperative Wireless LLC, a nationwide 220 MHz wireless communications network, and e-business applications.

Broadband –Key to Economic Development

It is not exaggerating to say that broadband telecommunications is the next ubiquitous service that we expect everyone should have, regardless of where they live.

The Texas Public Utility Commission (PUC) *Report to the 77th Legislature on Advanced Services in Rural and High Cost Areas* in January 2001 stated, “High-speed access to the Internet is increasingly seen as critical to Texas’ economic development, especially in rural Texas. While some rural areas may be well connected, most still lack access to the same telecommunications infrastructure or technologies enjoyed by those living in urban areas.”

While there are many success stories in rural America, some of which I will discuss later, that statement can easily apply to my native Kansas, North Carolina, Oklahoma, or any other state in the Union.

This committee is well aware of the history of bringing important new services to rural America. In the late 1930s, with the establishment of the Rural Electrification Administration (REA), the federal government helped support private citizens in their establishment of rural electric cooperatives to bring power, both in the sense of electricity and opportunity to the people of rural America. About a decade later, Congress amended the REA Act to also help rural Americans keep in touch via the telephone.

There is no doubt that these programs have been an enormous success in helping keep rural America vibrant to a point that many non-rural Americans have come to value the rural lifestyle. Satellite television enhanced the rural lifestyle even further by giving rural Americans access to the picture quality and viewing choices that urban and suburban markets had enjoyed through cable service.

A similar program is needed today to ensure that rural Americans never again fall behind. The economic development of the rural areas we care so deeply about is dependent on it.

As Federal Reserve Chairman Alan Greenspan said in an April 2000 New York Times article, “Like all the previous episodes of technical advance, the revolution in information technology already has improved living conditions in numerous ways and it will likely bring future benefits to rural communities that we now can only scarcely imagine.”

We now stand, if not at the dawn of a new day, still very early in the morning with regard to access and usage of broadband.

Broadband will further allow individuals to choose where they want to live, instead of dictating where they have to live. It will give small and large businesses the same freedom in determining where to locate.

Rural communities depend on the health of their small businesses for their own future survival. The Small Business Administration's June 2000 report, "Small Business Expansions in Electronic Commerce," measures how small businesses are coming to rely on the Internet:

- 85 percent of small businesses will do business over the World Wide Web by 2002
- Home-based businesses spend an average of \$1,100 a year on Internet systems
- Very small businesses, not home-based, with five or fewer employees spend about \$1,500 on Internet technology.

The SBA report also concludes, "Firms with fewer than 10 employees invested more aggressively (in 1999) in e-commerce infrastructure than larger firms."

As the Texas PUC report states, "E-commerce may be especially important for rural communities because it makes areas of Texas more attractive to businesses and residents. For the first time, proximity to customers is less significant. Yet proximity to fast Internet connections remains important, as new high-tech startups, as well as older, more established firms, are becoming increasingly dependent upon high-speed Internet connections."

Farms and ranches will be aided as much as the small towns. There are several applications for farm management that require high-speed connections.

CountryRoads Network in Minneapolis is an agribusiness-focused portal on the World Wide Web. Its Web pages are filled with ways for farmers to manage their finances, plan their planting schedules, monitor commodities futures, and report chemical and pesticide usage to state and federal regulators. In short, it is an invaluable business tool giving farmers and ranchers a greater opportunity to maintain a profitable operation.

A farmer's risk management strategy depends on being able to work with business partners in various locations. "Examples of those business partners would be lenders, agronomy and seed advisers, commodity marketing specialists, and a number of special advisers from extension universities, as well as equipment and chemical

manufacturers,” Roger Olson, president of CountryRoads Network recently told us. “A number of platforms exist to make these connections possible, but they require high-speed Internet.”

Rural Carriers Are Committed to Offering Broadband

The issue before us today is how we are working together cooperatively in a federal-private partnership to bring broadband access to rural America.

Many NRTC members and other telecommunications service providers throughout rural America began building broadband systems years ago. Digital subscriber line (DSL), cable modem, and fixed wireless are broadband deployment options, but they are not always cost-effective for rural America.

Here are just a few examples of rural providers’ commitment:

- **Panhandle Telephone Cooperative in Guymon, Oklahoma.** A rural cooperative that provides 15,700 telephone access lines over service area in excess of 6,000 square miles to a population of 2.71 access lines per square mile. Panhandle’s PCTI subsidiary began offering DSL to its customers in 1999 and now serves about 1,300 subscribers. PCTI started out serving the larger towns in its area and gradually has expanded to smaller population centers. Panhandle Telephone CEO Ron Strecker says there has been high customer satisfaction with DSL and that there is demand for broadband services because it will “allow people to remain in the area they love while they telecommute with a company in Dallas, L.A., anywhere.”
- **Grand River Mutual Telephone in Princeton, Missouri.** Since 1999, Grand River has been building out a copper-based broadband network in its service areas on both sides of the Missouri/Iowa border. It is building what developers call “Ethernet in the First Mile” (EFM), which is an improvement over more common DSL copper Internet services. While asymmetrical DSL services have a limit of about 18,000 feet from the service provider’s central office, Grand River’s farthest EFM subscriber is 24,700 feet away. Grand River currently offers 1 Mbps downstream (Internet to the user) service and 500 kbps upstream (user to the Internet). It has attracted a number of business subscribers, including

schools, car dealerships, grain elevators, and local government agencies. With advanced telecommunications systems in place, “businesses will relocate here because of the quality of life,” said Ron Hinds, Grand River’s director of marketing.

- **Diller Telephone Company in Diller, Nebraska.** Through its subsidiary, Diode Communications, this multifaceted communications company offers telephone, cable TV, satellite TV, and dial-up Internet service to subscribers in southeast Nebraska and northeast Kansas. Within a few weeks, Diode plans also to offer high-speed satellite Internet service. In addition, it has begun a trial broadband Internet service using a fixed wireless network. So far, about 30 households are participating in the trial, and several others are on a waiting list. The network now includes 5 towers that transmit two-way data services over the 2.4 GHz unlicensed band. Diode can reach subscribers about five miles in all directions from each tower, depending on the terrain. (The Diller area has a number of rolling hills.) One tower transmits to a subscriber eight miles from a tower. Diode is offering a variety of high-speed services ranging from 128 kbps residential service for \$40 a month to 1 Mbps business service for \$110 a month. As Representative Tom Osborne (R-Nebraska) said during a recent visit to Diller: “I’d heard briefly about the telephone company here and some of the things they’ve been doing. There are a handful of companies that I think are doing outstanding things in smaller communities, and this is one of them.”
- **StarBand Communications Inc.** StarBand, a satellite high-speed Internet company, serves many of the most remote regions of Alaska, including areas above the Arctic Circle. In May 2001, it began a distance learning service to 25 remote Alaska schools in cooperation with the Alaska Distance Learning and Technology Consortium, and the University of Alaska.

The Promise Of Satellite

For much of rural America, satellite networks will be the best broadband Internet option. In some cases, it will be the only option. Satellite-based solutions available

today travel over the Ku-band (frequencies near 12 GHz). These systems have all the elements needed to close a digital divide:

1. **Ubiquity** – Because they are 22,000 miles above the Earth, satellites are able to offer full coverage to just about every home regardless of how rugged the terrain. The consumer does not have to live near a central switching point or tower.
2. **Fast, Packet-Switched Access** – No more waiting for the initial dial-up routines. With a packet-switched satellite Internet connection, the user has an “always-on” connection. The computer and the Internet browser can be left on all the time. Once online, the user travels on the Internet up to seven times faster than standard 56 kilobit per second (kbps) dial-up Internet speeds.
3. **Available Now** – Many consumers living in rural, and even urban areas are still waiting for wired Internet access to the home to come to their neighborhoods. Virtually any home in America could receive satellite Internet.
4. **Supports Advanced Applications** – Satellite Internet will support streaming audio/video, large file transfers, and new entertainment options.
5. **Distance Learning** – Rural students have a wider range of opportunities to study subjects their schools do not offer.
6. **Telemedicine** – Hospitals and doctors offices have access to advanced telemedicine capabilities to offer life-saving medical treatment in areas where medical specialists do not practice.

NRTC has distribution agreements with the two Ku-band carriers that currently offer high-speed Internet to North America. DIRECWAY is a subsidiary of Hughes Network Systems-- the same people who brought us DIRECTV. StarBand has substantial backing from EchoStar, providers of the DISH Network. EchoStar recently announced that it is increasing its StarBand investment to 60 percent ownership of the company. Both DIRECWAY and StarBand have made substantial commitments to serving rural America. NRTC has pilots and is begging to offer DIRECTWAY and StarBand through its membership network.

The Ku-band carriers offer downstream data rates of up to 400 kbps, while the upstream speeds can reach 128 kbps. Satellite Internet can reach any home that has a

clear view of the southern sky. The 21 x 36-inch DIRECWAY dish and 24 x 36-inch StarBand dish are somewhat larger than dishes DIRECTV and EchoStar use to provide TV-only service on the Ku-band. However, a satellite Internet subscriber has the option of receiving TV service using an Internet dish.

Next-generation Ka-band (frequencies near 18 GHz) technologies offer faster data rates and service equal to or better than the landline Internet services that will be available in urban areas. For example, WildBlue Communications Inc., a Ka-band service provider, plans to offer satellite service at 3 Mbps downstream/400 kbps upstream beginning next year. Hughes plans to offer its Ka-band SPACEWAY service with downstream rates up to 16 Mbps within the next two years. Teledesic, a consortium of investors including Microsoft's Bill Gates and Nextel's Craig McCaw, plans to begin offering a global service with up to 64 Mbps downstream using a constellation of 288 low earth orbiting satellites.

An Integrated Approach

Nothing we say in this testimony should imply that satellite should be the only technology available to rural Americans. As the case studies we cited make clear, rural carriers are deploying a variety of networks that make use of the copper telephone wire already in place, as well as fiber optic links, coaxial cable, and fixed wireless technologies.

We see satellite Internet as yet another option for rural service providers. In many cases, the carrier will integrate satellite service with other technologies to ensure that all of their subscribers have access to advanced technologies.

Diode Communications, for example, expects to reach 75 percent of its subscribers with its fixed wireless service. Grand River Mutual Telephone's EFM service will pass 70 percent of the carrier's subscribers. While Panhandle Telephone has been able to extend DSL to some small communities, it also cannot offer the copper-based service to everyone. After a certain distance from a carrier's central office or fixed wireless tower site, it is no longer cost-effective to build out broadband service to subscribers living in the most remote areas. Once you can count the number of subscribers per line mile or per tower on your hand, it is impossible to cost justify

expansion of a terrestrial network. As Diode's Randy Sandman said to us, "The cost of equipment is prohibitive."

Diode, Grand River, and Panhandle Telephone plan to offer satellite Internet to fill in their remaining service areas. The same scenario is forming throughout rural America as consumers realize there is no reason the locations of their households should block them from receiving advanced telecommunications services.

Cost Obstacles Remain

The cost of providing rural broadband service is considerable, whether it is a terrestrial approach, a satellite approach, or a combination of the two. Our case studies demonstrate how rural carriers are forging ahead with their broadband business plans, but each of those carriers would agree that they need assistance to finish the job.

The National Exchange Carrier Association (NECA) has given us a good estimate of how much it will cost to roll out copper-based services. Last year it released the results of a DSL cost study requested by NTCA and other rural telephone organizations. NECA estimated that it would cost \$10.9 billion to upgrade 3.3 million rural telephone lines that have not been conditioned to support DSL transmissions. That cost does not include the eventual cost of consumer premises equipment (CPE). NECA estimates that there are approximately 1.7 million rural households located beyond 18,000 feet of a telephone central office. Terrestrial broadband deployment also includes the cost of digging trenches for approaches that require fiber optic facilities, and building transmission towers for fixed wireless systems.

To deploy a broadband satellite system, a company must: construct a satellite(s), purchase launch services, obtain insurance against launch/on-orbit failure, install a gateway ground infrastructure, and significantly subsidize the cost of the end-user equipment. Much of that cost can pass to the rural Internet provider, which sometimes will negotiate for transponder space. In addition, the cost of launching satellite businesses can affect the cost of CPE units. Satellite CPE costs can amount to nearly \$1,000, even if equipment manufacturers subsidize the purchase, as they are planning to do.

All rural broadband carriers will need some additional assistance. Congress should take into account the entire cost of deploying the infrastructure of both terrestrial

and satellite networks when setting the qualification requirements. Any assistance program should be “technology neutral.” Carriers should be eligible to receive assistance with costs of building the network and deploying CPE units.

The Need for Funding

One of the greatest obstacles to rural broadband deployment is getting the funding to build rural broadband networks on a wide-scale basis.

The Federal Reserve Bank of Kansas City in its 2000 Annual report said, “For most rural Americans the digital divide is a stubborn reality. Advanced services like broadband are offered to communities solely at the discretion of the provider – and many rural areas simply are not attractive markets.”

The Rural Utilities Service (RUS) of the United States Department of Agriculture (USDA) historically has been the entity that aided rural telecommunications carriers in getting past the marketplace barriers. RUS currently has a \$100 million broadband initiative. Eligible rural entities have over-subscribed the program. The Administration proposes to fund the program again next year at the same level.

According to the October 2000 Joint Report of the Iowa Utilities Board and the Iowa Department of Economic Development, “Small rural telephone companies have done a better job of providing universal telephone service than large companies serving rural areas. The affordability of high-speed Internet access technologies, particularly for low-income Iowans, remains questionable.”

RUS loans are made to small rural companies, which are best suited for maximizing the economic potential of broadband and all telecommunications services to low-population areas. Rural providers have the facilities and knowledge of the community to best provide basic service, maintenance, technical support, and content-based online services.

Congress should consider expanding the RUS broadband initiative, both in dollar amount and in the types of broadband services that would be eligible for financial assistance.

Transmission Speeds

Congress also must take care when setting the technical benchmarks for carrier's assistance eligibility. As mentioned before, the downlink speeds for current two-way satellite broadband services are about 400 kbps while the uplink speed averages 128 kbps. Many current-generation copper-based networks offer similar throughputs. However, the FCC defines "broadband" as services that exceed 200 kbps both upstream and downstream. Some industry and government entities set the benchmark even higher.

Eligibility for participation in any federal program should have a speed requirement consistent with what the current rural service providers can offer. As technology advances, Congress could readjust minimum data rate benchmarks when appropriate. Because technological advancement is swift, Congress may find it appropriate to delegate the authority to make the adjustments to the agencies that will administer the broadband assistance programs.

Possible Options

I greatly appreciate all of the hard work many members of this committee and many others in Congress have committed to expanding that opportunity.

The \$100 million RUS Broadband Pilot Program has proven to be very valuable with 55 applications for more than \$400 million. This is a Treasury rate program with a \$2 million set-aside for grants. Fifty-one million dollars out of the original \$100 million in the program already has been approved.

We applaud the RUS and the Administration, which has announced its intention to continue this program. At the same time, we believe it is our obligation to point out several aspects that could improve the program.

The funding level should be increased. We are cognizant that the amount of funds available is limited. There are ways to help leverage those scarce resources. Here are some possibilities:

1. **Treasury Rate Program** – This should be a relatively low-cost program to administer, as the only costs are potential defaults and staff time. There is no interest rate subsidy.

2. **Loan Guarantee Program** – Create a new option with a 90 percent guarantee. This would cost less than the Treasury rate program, as a private market lender would assume some risk. The added benefit is that you help foster the public-private partnership.
3. **Hardship Program** – Create a program with an interest rate below the Treasury rate. This would cost somewhat more but could help foster the public policy benefit of bringing broadband to the more remote or lower-income areas of the country.
4. **Grant Program** – A grant program is, of course, the highest cost because there is no repayment to the Treasury other than increased economic activity. It may be appropriate to have some funds set aside for grants.
5. **Concurrent Loans** – The program should be administered in a way that allows for but does not mandate concurrent loans so that even more private participation may be encouraged.

Program Rules

It is absolutely essential that the minimum speeds required be consistent with what all technologies can adequately deliver. The current pilot program requires speeds of 200 kbps each way and puts satellite and some other technologies at a disadvantage. It is equally essential that CPE units be made eligible for any program designed to deliver broadband to rural America. Terms of the loans should be for the expected useful life of the asset.

Other Congressional Initiatives

Congress is considering several bills intended to help deliver broadband to rural America.

As a cooperative, we feel that a not-for-profit status is the right model for many of our members, given their locations. Some proposed programs would give rural carriers tax incentives to provide high-speed services. There is a danger that such systems will be designed for tax-paying carriers only, and will lack the needed flexibility to provide incentives to tax-exempt organizations. At the very least, any legislation to provide tax credit incentives should allow tax-exempt organizations to sell or trade their tax credits.

Conclusion

Federal broadband assistance programs should recognize that multiple technologies from various providers, including cooperatives, represent our best chance to deploy broadband fully and all of its applications in the most timely and cost-efficient manner. A clear commitment to rural America and other unserved/underserved communities should be, at a minimum, a requirement of any company requesting any type of federal assistance.

Broadband has the capability to change the lives of rural Americans. It is an issue that needs immediate attention. Your attention to this issue today is timely. We need your support to ensure that the potential of broadband service touches all Americans.